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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kevin Hart Esq
Hewlett-Packard Company
Intellectual Property Adminstration
P O Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
QUILLEN, ALLEN E	

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/715,892	BOWER ET AL.	
	Examiner	Art Unit	
	Allen E. Quillen	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1 and 10-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-9,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 2, 5, 9, 19, 20 have been considered but are moot in view of the new ground(s) of rejection. Claims 1, 10-18 are cancelled. New claim number 20 is received. Claims 2-9, 19, 20 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 2-4, 6-8, 19, 20 are rejected under 35 U.S.C. 102(a) as being anticipated by MacInnis, et al, U.S. Patent 6,501,480.

4. Regarding claim 2, representative of claim 20, MacInnis discloses a device for producing a composite (Column 3, line 51) graphical [digital video, Column 1, lines 49-60] data stream (Figure 1, Column 1, lines 50-53) containing pixel data (Column 5, lines 2, 5, 31) corresponding to an image to be rendered (Figures 1-5, Column 11, lines 16-20), the composite graphical [digital video] data stream being formed from multiple graphical [digital video] data streams (Column 3, lines 39-41, Column 4, lines 1-16; Column 6, lines 30-45), each of the multiple graphical [digital video] data streams being provided by a graphics pipeline (Figure 4, Column 6,

lines 19-21), each graphics pipeline being configured to process pixel data corresponding to at least a portion of the image to be rendered, said device comprising: an input mechanism configured to receive the multiple graphical [digital video] data streams from the graphics pipelines, provide a frame of data corresponding to the image to be rendered, and insert pixel data from the multiple graphical data [digital video] streams into said frame of data such that, in response to receiving a first of the multiple graphical [digital video] data streams, said input mechanism provides said frame of data and inserts the pixel data from the first of the multiple graphical [digital video] data streams into said frame of data to form at least a portion of the composite graphical [digital video] data stream (Figure 5, Column 9, line 5 through Column 11, line 7; Column 43, lines 62 through Column 47, line 45; Column 8, line 61 through Column 9, line 4; Column 43, line 62 through Column 44, line 33, ...*blending of different layers of graphics and/or video*); wherein said input mechanism has a first compositing element and a second compositing element, said first compositing element being configured to provide said frame of data in response to receiving pixel data corresponding to the first of the multiple graphical [digital video] data streams (*MPEG or other digital video signals input to the system, analog video signals, digital video signals*, Column 3, lines 39-55; *With both analog and digital video input, either one may be scaled while the other is displayed full size at the time as passthrough video.* Column 4, lines 34-36; *various numbers of signals may be composited, including, for example two or more video windows*, Column 10, lines 65-66; Column 9, lines 60-62), said first compositing element being further configured to insert the pixel data corresponding to the first of the multiple graphical [digital video] data streams into said frame of data to form a first compositing graphical [digital video] data stream, said pixel data corresponding to the first of the

multiple graphics [digital video] data streams and a first displayed portion of said image, said second compositing element being configured to receive pixel data corresponding to the second of the multiple graphical [digital video] data streams and said first compositing graphical [digital video] data stream, said pixel data corresponding to the second of the multiple graphics [digital video] data streams and a second displayed portion of said image, said second compositing element (*graphics compositor engine*, Column 47, line 25; Figure 6, element 58, *display engine*, Column 5, lines 24-50) being further configured to combine the pixel data corresponding to the second of the multiple graphical [digital video] data streams and said first compositing graphical [digital video] data stream to form a second compositing digital video data stream (Figure 4, element 108, *video compositor block with three inputs: graphics display, video display and passthrough video*, Column 8, lines 61-63; Column 1, lines 49-60).

5. Regarding claim 3, MacInnis discloses the device of claim 2, wherein the multiple graphical data streams simultaneously (Column 4, lines 34-36) provide pixel data to said input mechanism, the first of the multiple graphical data streams containing three-dimensional (Column 5, line 53) pixel data corresponding to the image to be rendered, the second of the multiple graphical data streams containing two-dimensional (Column 11, lines 60 through Column 12, line 14) pixel data corresponding to the image to be rendered, and wherein said input mechanism is configured to combine said two-dimensional pixel data and said three-dimensional pixel data by replacing at least a portion of the pixel data provided by the second of the multiple graphical data streams with at least a portion of the pixel data provided by the first of the multiple graphical data streams (Column 57, lines 3, 6, 15, 17).

6. Regarding claim 4, MacInnis discloses the device of claim 2, further comprising: a controller electrically communicating with said input mechanism (Figures 2 - 4, Column 4, line 1 through Column 6, line 20) said controller being configured to provide a first control signal to said input mechanism, said first control signal containing information regarding which portion of said frame of data corresponds to the pixel data provided from the first of the multiple graphical data streams such that, in response to receiving said first control signal and the pixel data from the first of the multiple graphical data streams, said input mechanism inserts the pixel data from the first of the multiple graphical data streams into said corresponding portion of said frame of data to form at least a portion of the composite graphical data stream (Column 4, lines 51-67).

7. Regarding claim 6, representative of claim 8, MacInnis discloses the device of claim 2, wherein said controller is configured to provide a second control signal to said input mechanism, said second control signal corresponding to one of multiple compositing modes (Column 4, lines 34-39), a first of said compositing modes corresponding to each of the graphics pipelines providing pixel data associated with an entire frame of the image to be rendered, the pixel data of each of the graphics pipelines including a coordinate value offset (Column 111, lines 9-20; Column 12, line 11; Column 13, lines 65; Column 14, line 51) with respect to pixel data of others of the graphics pipelines, said input mechanism being configured to combine the pixel data from the multiple graphical data streams so as to blend color values associated with corresponding coordinate values (Column 30, line 54-55).

8. Regarding claim 7, MacInnis discloses the device of claim 2, wherein said controller is configured to provide a second control signal to said input mechanism, said second control signal corresponding to one of multiple compositing modes, a first of said compositing modes corresponding to each of the graphics pipelines providing pixel data associated with a portion of the image to be rendered, the pixel data of each of the graphics pipelines being super sampled, said input mechanism being configured to average, with a selected weighting, the super-sampled pixel data (see above; Column 30, lines 32 through Column 31, line 36; through line 43, antialiased text and graphics).

9. Regarding claim 19, MacInnis discloses the device of claim 2, wherein said controller is configured to provide a second control signal, a third control signal and a fourth control signal selectively to said input mechanism; said second control signal corresponding to a second of multiple compositing modes, the second of said compositing modes corresponding to each of the graphics pipelines providing pixel data associated with an entire frame of the image to be rendered, the pixel data of each of the graphics pipelines including a coordinate value offset (*changing the start address... shifts of any number of pixels*, Column 29, lines 50-56) with respect to pixel data of others of the graphics pipelines, said input mechanism being configured to combine the pixel data from the multiple graphical data streams so as to blend color values associated with corresponding coordinate values (*pixel color type, alpha blend factor, location on the screen,* Column 4, lines 65-67); said third control signal corresponding to a third of multiple compositing modes, a first of said compositing modes corresponding to each of the graphics pipelines providing pixel data associated with a portion of the image to be rendered, the

pixel data of each of the graphics pipelines being super sampled (Column 31, lines 19-43), said input mechanism being configured to average, with a selected weighting, the super sampled pixel data; said fourth control signal corresponding to a fourth of multiple compositing modes, the fourth of said compositing modes corresponding to each of the graphics pipelines providing pixel data associated with a portion of the image to be rendered, said input mechanism being configured to combine the pixel data from the multiple graphical data streams to form the composite graphical data stream. (*transparent black, video passthrough, digital video, analog video, upscale, downscale, graphics data simultaneously,* Column 43, lines 63-67; Column 42, lines 31-39; Column 5, lines 24-50; Figure 5, Column 9, line 5 through Column 11, line 7; Column 43, lines 62 through Column 47, line 45; Column 8, line 61 through Column 9, line 4; Column 43, line 62 through Column 44, line 33, *...blending of different layers of graphics and/or video; MPEG or other digital video signals input to the system, analog video signals, digital video signals*, Column 3, lines 39-55; *With both analog and digital video input, either one may be scaled while the other is displayed full size at the time as passthrough video.* Column 4, lines 34-36; *blends* ***signals from four different sources,*** *...various numbers of signals may be composited, including, for example two or more video windows*, Column 10, lines 60-66; Column 9, lines 60-62; *graphics compositor engine*, Column 47, line 25; Figure 6, element 58, *display engine*, Column 5, lines 24-50; Column 42, lines 31-39; video signals are processed in the video display pipeline while the graphics data is processed in the graphics display pipeline [each}, *respectively, and outputs to...*], Column 43, line 63 through Column 44, lines 7; *two or more graphics windows may be processed in parallel,* Column 6, lines 37-40; *logical windows,* Column 4, lines 51-61).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 5, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacInnis, et al, U.S. Patent 6,501,480, in view of Jones et al, U.S. Patent 6,573,928.

12. Regarding claim 5, MacInnis discloses the device of claim 20, further comprising: an output mechanism electrically communicating with said input mechanism, said output mechanism being configured to receive the composite digital video data stream and provide an output composite video data stream, said output composite video data stream being selectively configurable as any one of an analog video data stream, an analog video data stream, a digital video data stream, and a digital video data stream (Figures 1-3, Column 1, lines 39-55; Column 4, lines 1-29).

MacInnis does not disclose stereo. Jones teaches stereo (Column 9, lines 63-67). The motivation for combining composited graphics and video image data with stereo data is enable 3D vision without adding extra memory (Column 6, lines 50-54). Jones is evidence that at the time of invention it would have been obvious to one skilled in designing 3D video graphics machines to combine the benefits of parallel graphics and video compositing, as MacInnis discloses, with stereoscopic vision methods, as Jones teaches, to provide 3D vision without adding extra memory.

13. Regarding claim 9, MacInnis discloses the device of claim 5, wherein said output mechanism has a first left channel frame buffer, a second left channel frame buffer, a first right channel frame buffer, and a second right channel frame buffer, said output mechanism being selectively configured to provide said passive digital video data stream by receiving said composite digital video data stream, allocating pixel data from said composite digital video data stream to said first left channel frame buffer, said second left channel frame buffer, said first right channel frame buffer, and said second right channel frame buffer, and simultaneously

outputting pixel data from one of said left channel frame buffers and one of said right channel frame buffers (Figures 2-5, elements 52, 59, 60, 184, 186; Figure 14, Column 25, line 62 through Column 30, line 31).

MacInnis does not disclose stereo. Jones teaches stereo (Column 9, lines 63-67). The motivation for combining composited graphics and video image data with stereo data is enable 3D vision without adding extra memory (Column 6, lines 50-54). Jones is evidence that at the time of invention it would have been obvious to one skilled in designing 3D video graphics machines to combine the benefits of parallel graphics and video compositing, as MacInnis discloses, with stereoscopic vision methods, as Jones teaches, to provide 3D vision without adding extra memory.

Response to Arguments

14. Applicant's arguments with respect to claims 2, 5, 9, 19, 20 have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant asserts (Page 11, 3rd Paragraph; Page 13, 3rd Paragraph) that the compositing/blending in MacInnis is not "from a frame of data generated by a compositing element that includes pixel data corresponding to separate displayed portions of an image".

Examiner respectfully notes, however, that, in the claims, MacInnis discloses frame-based compositing of pixels corresponding to separate displayed portions of an image (Column 5, line 24 through Column 6, line 67, *graphics blending, next window, two or more graphics windows;* Column 11, lines 52-55; multiple compositors: *a video compositor* (Column 8, lines

61-67) , *a graphics compositor engine...composited in other line buffers.* (Column 47, line 25-39), *upper layers are composited in memory buffer storage buffers called line buffers. Each line buffer... is sized to contain pixels for one scan line* (column 46, lines 43-45).

16. Applicant asserts (Page 12, 3rd Paragraph through Page 13, 1st Paragraph) a distinguishment between video image data and graphics image data, and that MacInnis is compositing a video signal with a graphics signal.

The Examiner respectfully replies however, that, in the claims, MacInnis clearly addresses the matter, thus: "The display engine is the part of the graphics display system that receives display pixel data from any combination of locally attached video and graphics input ports, processes the data in some way, and produces final display pixels as output. This application includes references to both graphics and video, which reflects in certain ways the structure of the hardware itself. This split does not, however, imply the existence of any fundamental difference between graphics and video, and in fact much of the functionality is common to both. Graphics is used herein may include graphics, text and video (Column 1, lines 45-60)."

Furthermore, MacInnis discloses compositing/blending graphics data streams (*After the processing of the video signals and the graphics data have been completed...receives... data from... the graphics display pipeline, **respectively**, blending a plurality of graphics images into a blended graphics image, blending of different layers of graphics and/**or** video,* Columns 44, lines 1-38; *each pixel, reading pixels from memory, as in a conventional graphics display device,*

Column 45, line 64 through 46, line 55; *the graphics compositor engine,* Column 47, lines 24-37; Figure 5, element 140, Figure 28, element 904).

17. Applicant asserts (Page 14, 3rd Paragraph) that MacInnis does not disclose stereo video. The Examiner respectfully must agree in that explicitly the term "stereo" is not there, but the Examiner carefully notes that MacInnis uses the terms scalability, layered depth, warping, wich are well-documented stereo vision/3D technical MPEG and HDTV compliance issues, which MacInnis is addressing in his work. Nonetheless, the Examiner has found an additional reference, Jones, that teaches stereo. And, the Examiner has provided other references as prior art not used to clarify and document that these features disclosed by MacInnis are in fact stereo/3D TV issues involving MPEG and HDTV compliance.

Prior Art Not Used

MacInnis et al, U.S. Patent 6,573,905, multiple graphics layers for HDTV and MPEG

Szeliski, U.S. Patent 6,487,304, Multiview Approach to Motion and Stereo, layered approach to stereo applications in a networked environment.

Buckelew et al, U.S. Patent 6,278,645, Frame-sequential stereo using pixel planes, and using regions of the display.

Popescu, Voicu, et al, *Efficient Warping for Architectural Walkthroughs Using Layered Depth Images,* IEEE, @1998.

Ho-Chao Huang and Yi-Ping Hung, "Panoramic Stereo Imaging System with Automatic Disparity Warping and Seaming", *Graphics Models and Image Processing,* Vol. 60 No. 3 May, pp. 196-208, 1998.

J. Shade, S. Gortler, L.-W. He, and R. Szeliski, Layered Depth Images, Computer Graphics (SIGGRAPH '98), Proceedings, pp. 231-242, Orlando, FL, July, 1998.

Requirements for Information

18. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application. Regarding the other basis of rejections, Examiner respectfully notes that the copending applications, 09/715,253, '232 (now US Patent 6,680,739 to be effective January 20, 2004), '746, '882 (now US Patent 6,621,500, issued September 16, 2003), '600, '335, as revealed by the Applicant in the IDS, still stand under the double patenting statues, as noted in the Office Action dated February 12, 2003.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen E. Quillen whose telephone number is (703) 605-4584. The examiner can normally be reached on Tuesday – Friday, 8:30am – noon and 1:00 - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella, can be reached on (703) 308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or FAX'd to:

(703) 872-9314 (for Technology Center 2600 only)

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Sixth Floor (Receptionist), Arlington, Virginia

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number (703) 305-9600 or (703) 305-3800.

Allen E. Quillen
Patent Examiner
Art Unit 2676

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January 2, 2004

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600